Children consider the probability of random success when evaluating knowledge

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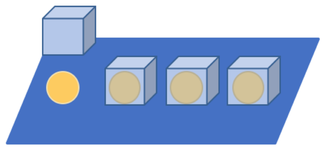
Introduction

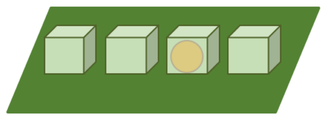
To infer what others know, we must consider under what epistemic states their actions were both rational and probable. We test whether preschoolers use their understanding of probability to evaluate knowledge, comparing the probability of agent's actions (and their outcomes) under different epistemic states.

Procedure

Introduction: participants see whether there is a marble under each box



100% side

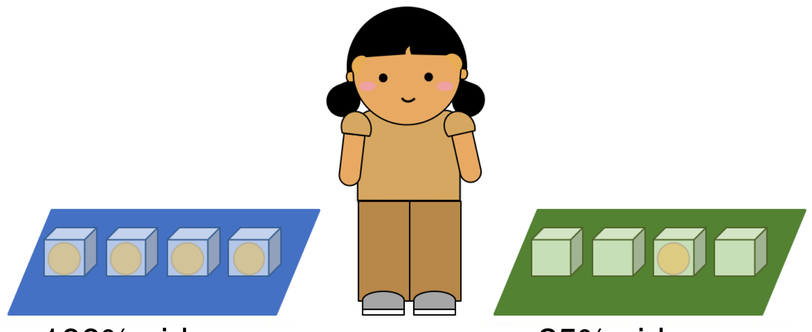


25% side

Test questions:

I need to find out if my friend *knows* what's under all of the boxes. Should I ask her to find a marble on the blue side, or on the green side?

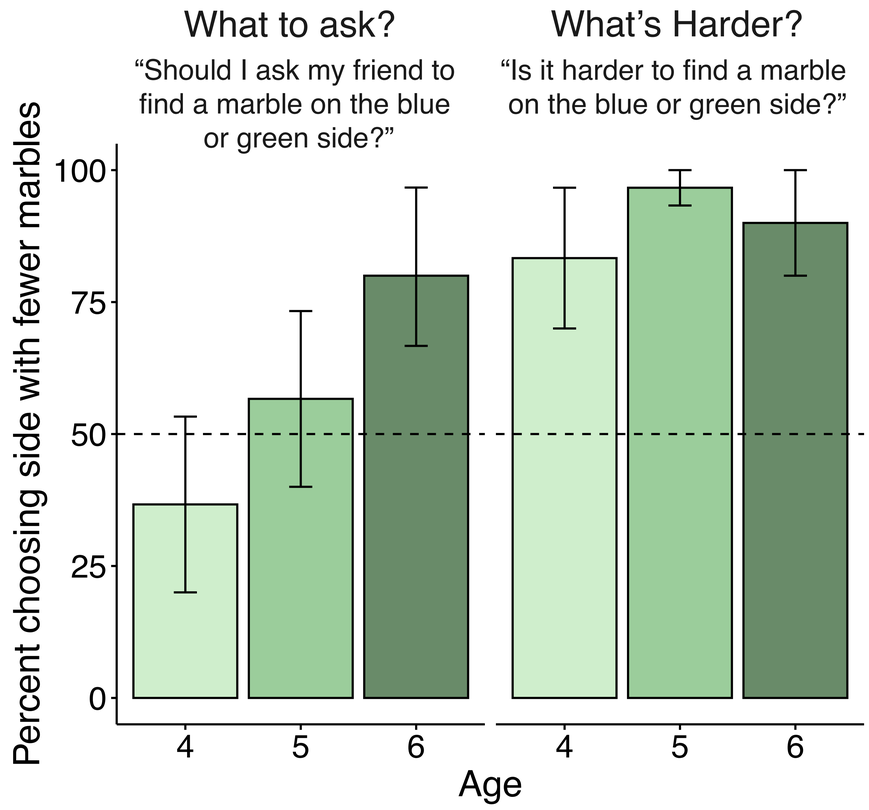
And which one is *harder*? Is it harder to find a marble on the blue side, or on the green side?



100% side

25% side

Results



ASPREDICTED

N = 90 4- to 6-year-olds

Only six-year-olds reliably preferred to ask about the more diagnostic side (where the probability of a chance success was only 25%).

However, children in all age groups were able to identify that it was objectively harder to find a marble on this side.

Discussion & Future directions

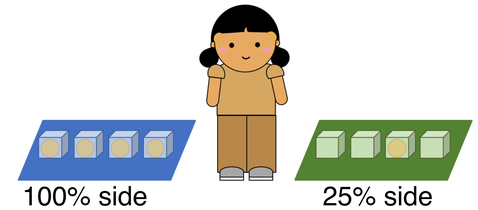
Although even infants understand probability, participants did not use probability to evaluate epistemic states before age six. Why might this be?

Open question: Do younger children lack a capacity, or just fail to apply their expectations?

Ongoing: we replicate Experiment 1 but switch the question order. We test whether prompting 4- and 5-year-olds to consider difficulty first helps them identify that it's more informative to ask about the more diagnostic (25%) side.

Which one is *harder*? *Easier*?

Which side should we ask about?



100% side

25% side